

ABSTRACT OF THE DISCLOSURE

This invention, referred to as an Energy-Efficient Running Aid, relates to passive (spring-actuated) running/walking aids for orthoses, prostheses, and robots - to allow faster running using less energy. The full invention is an leg orthoses or an energy-efficient running brace. It is a running brace which acts in parallel with a runner's leg to support the runner during stance phase and to capture all foot-impact energy, preferably with the optimal constant-force curve, for use to thrust said runner back into the air during toe-off. Novel structural elements include a hyper-extending knee-lock, a variable-angle knee-lock, a kneeless adjustable-length brace, a self-guiding/constant force bow spring, a pulley-based/constant-force bow spring, a asymmetric brace foot, a load-tightening full harness, and a means to guarantee lock release at toe-off. The running brace eliminates impact injuries by absorbing the impact energy.

FOOTSTRESS